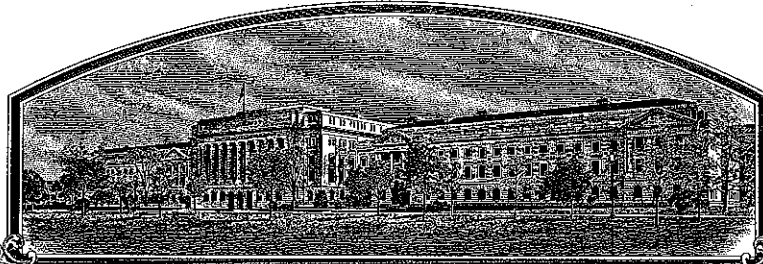


No.

200500051



THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Texas Agricultural Experiment Station/ USDA-ARS

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF TWENTY YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE ABOVE PURPOSE, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE ABOVE PURPOSE, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. IN THE UNITED STATES SEED OF THIS VARIETY SHALL BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED AND (2) SHALL CONFORM TO THE NUMBER OF GENERATIONS SPECIFIED BY THE OWNER OF THE RIGHTS. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

RICE

'Hidalgo'

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this twelfth day of December, in the year two thousand and five.

Attest:

Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Secretary of Agriculture

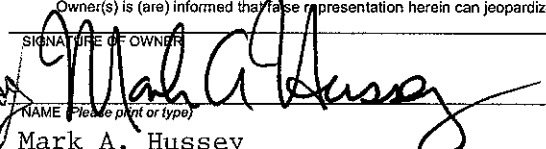
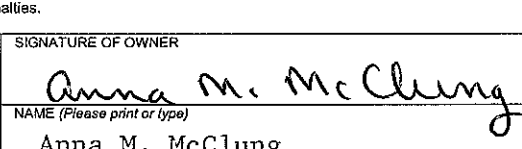


U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
SCIENCE AND TECHNOLOGY - PLANT VARIETY PROTECTION OFFICE

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE
(Instructions and information collection burden statement on reverse)

The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a) and the Paperwork Reduction Act (PRA) of 1995.

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF OWNER Texas Agricultural Experiment Station (TAES)/USDA-ARS		2. TEMPORARY DESIGNATION OR EXPERIMENTAL NAME RU 0003009	3. VARIETY NAME Hidalgo
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP Code and Country) Dr. Mark A. Hussey Associate Director, TAES 2147 TAMU College Station, TX 77843-2147 Anna M. McClung USDA-ARS 1509 Aggie Dr. Beaumont, TX 77713		5. TELEPHONE (include area code) (979) 845-4747	FOR OFFICIAL USE ONLY PVPO NUMBER 200500051 FILING DATE December 28, 2004
6. FAX (include area code) (979) 458-4765		7. IF THE OWNER NAMED IS NOT A "PERSON", GIVE FORM OF ORGANIZATION (corporation, partnership, association, etc.) St. of TX Res. Agency/US Gov't Res. Agency	
8. IF INCORPORATED, GIVE STATE OF INCORPORATION		9. DATE OF INCORPORATION	
10. NAME AND ADDRESS OF OWNER REPRESENTATIVE(S) TO SERVE IN THIS APPLICATION. (First person listed will receive all papers) Janie Hurley Technology Licensing Manager, Agriculture/Life Sciences Technology Licensing Office The Texas A&M University System 3369 TAMU College Station, TX 77843-3369		FILING AND EXAMINATION FEES: \$ 3,652 - DATE 12/28/04 CERTIFICATION FEE: \$ 682.00 DATE 9-15-05	
11. TELEPHONE (include area code) (979) 847-8682	12. FAX (include area code) (979) 845-1402	13. E-MAIL jhurley@tamu.edu	
14. CROP KIND (Common Name) Rice	16. FAMILY NAME (Botanical) Gramineae	18. DOES THE VARIETY CONTAIN ANY TRANSGENES? (OPTIONAL) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO IF SO, PLEASE GIVE THE ASSIGNED USDA-APHIS REFERENCE NUMBER FOR THE APPROVED PETITION TO DEREGULATE THE GENETICALLY MODIFIED PLANT FOR COMMERCIALIZATION.	
15. GENUS AND SPECIES NAME OF CROP Oryza sativa	17. IS THE VARIETY A FIRST GENERATION HYBRID? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	20. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE SOLD AS A CLASS OF CERTIFIED SEED? (See Section 83(a) of the Plant Variety Protection Act) <input checked="" type="checkbox"/> YES (If "yes", answer items 21 and 22 below) <input type="checkbox"/> NO (If "no", go to item 23)	
19. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow instructions on reverse) a. <input checked="" type="checkbox"/> Exhibit A. Origin and Breeding History of the Variety b. <input checked="" type="checkbox"/> Exhibit B. Statement of Distinctness c. <input checked="" type="checkbox"/> Exhibit C. Objective Description of Variety d. <input checked="" type="checkbox"/> Exhibit D. Additional Description of the Variety (Optional) e. <input checked="" type="checkbox"/> Exhibit E. Statement of the Basis of the Owner's Ownership f. <input checked="" type="checkbox"/> Voucher Sample (2,500 viable untreated seeds or, for tuber propagated varieties, verification that tissue culture will be deposited and maintained in an approved public repository) g. <input checked="" type="checkbox"/> Filing and Examination Fee (\$3,652), made payable to "Treasurer of the United States" (Mail to the Plant Variety Protection Office)		21. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF CLASSES? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO IF YES, WHICH CLASSES? <input type="checkbox"/> FOUNDATION <input checked="" type="checkbox"/> REGISTERED <input type="checkbox"/> CERTIFIED	
23. HAS THE VARIETY (INCLUDING ANY HARVESTED MATERIAL) OR A HYBRID PRODUCED FROM THIS VARIETY BEEN SOLD, DISPOSED OF, TRANSFERRED, OR USED IN THE U. S. OR OTHER COUNTRIES? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO IF YES, YOU MUST PROVIDE THE DATE OF FIRST SALE, DISPOSITION, TRANSFER, OR USE FOR EACH COUNTRY AND THE CIRCUMSTANCES. (Please use space indicated on reverse.)		22. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO IF YES, SPECIFY THE NUMBER 1,2,3, etc. FOR EACH CLASS. <input checked="" type="checkbox"/> FOUNDATION <input checked="" type="checkbox"/> REGISTERED <input checked="" type="checkbox"/> CERTIFIED (If additional explanation is necessary, please use the space indicated on the reverse.)	
25. The owners declare that a viable sample of basic seed of the variety has been furnished with application and will be replenished upon request in accordance with such regulations as may be applicable, or for a tuber propagated variety a tissue culture will be deposited in a public repository and maintained for the duration of the certificate. The undersigned owner(s) is(are) the owner of this sexually reproduced or tuber propagated plant variety, and believe(s) that the variety is new, distinct, uniform, and stable as required in Section 42, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act. Owner(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.		24. IS THE VARIETY OR ANY COMPONENT OF THE VARIETY PROTECTED BY INTELLECTUAL PROPERTY RIGHT (PLANT BREEDER'S RIGHT OR PATENT)? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO IF YES, PLEASE GIVE COUNTRY, DATE OF FILING OR ISSUANCE AND ASSIGNED REFERENCE NUMBER. (Please use space indicated on reverse.)	
SIGNATURE OF OWNER  NAME (Please print or type) Mark A. Hussey		SIGNATURE OF OWNER  NAME (Please print or type) Anna M. McClung	
CAPACITY OR TITLE Associate Director, TAES	DATE 12/17/2004	CAPACITY OR TITLE Research Geneticist	DATE 12/09/04

(See reverse for instructions and information collection burden statement)

'HIDALGO' RICE

Anna M. McClung
USDA-ARS

William D. Park
Texas A&M University System

'Hidalgo' (*Oryza sativa* L.), a long-grain rice cultivar that is adapted for production to the southern rice growing region, was developed at the Texas A&M University System Agricultural Research and Extension Center at Beaumont, TX, by the USDA-ARS in cooperation with the Texas Agricultural Experiment Station, the Texas Rice Improvement Association, and the Texas Rice Research Foundation.

Exhibit A. ORIGIN AND BREEDING HISTORY

Hidalgo was developed from the cross 'Cypress/Pelde (sel 96:3944)/Jefferson' (cross number 96165), made at the Texas A&M University System Agricultural Research and Extension Center at Beaumont, TX in 1996. Cypress is a semidwarf, long grain cultivar, with superior milling quality that was released in 1992 and has been commercially grown in the southern U.S. It has conventional long grain cooking quality as evidenced by an apparent amylose content of 20-22% and an intermediate alkali spreading value (rating of 4 in 1.7 % KOH). Pelde is an early maturing, conventional height cultivar with rough (pubescent) leaves, lemma and palea. Pelde has a cooking quality which is different from typical southern U.S. long grains. Its apparent amylose content is approximately 12% and it has a high-intermediate alkali spreading value (rating of 2-3 in 1.7% KOH). This cooking quality is desired by some specialty markets and is found in the cultivars Jacinto and Cadet. However, both Jacinto and Cadet are inferior in productivity as compared to current long grain cultivars. Jefferson is a conventional cooking long grain cultivar that was released in 1996. Jefferson is a semidwarf, has very early maturity, excellent resistance to lodging, and improved resistance to blast (caused by *Pyricularia grisea*) and sheath blight (caused by *Rhizoctonia solani*) diseases. The objective of the cross was to incorporate the unique cooking quality that is found in Pelde (and is also a parent of Jacinto) into a high yielding cultivar with improved yield, milling quality, and disease resistance.

Hidalgo was developed using a conventional pedigree breeding scheme that was augmented using marker assisted selection. An F₈ panicle from the breeding selection 938A1-20-7-1-2-3 that was derived from a cross of Cypress/Pelde was used to cross with Jefferson in 1996. F₂ seed was produced during the 1996-97 winter in the greenhouse. The F₂ progeny were planted in the Spring 1997 winter nursery facilities located in Lajas, Puerto Rico. Seed from single F₂ plants was harvested as the F₃ generation and was planted in Beaumont during 1997. Leaf tissue was harvested across the F₃ plants derived from each F₂ mother plant and was analyzed using molecular marker RM190 which is associated with the *Waxy* gene. This gene controls granule bound starch synthase and determines grain amylose content. Groups of progeny which did not possess the desirable allele for the *Waxy* gene (i.e. did not possess the low amylose content allele)

were discarded. Single F_3 plants were harvested (F_4 seed) and were planted as family bulks in the winter nursery during Spring 1998 and were tested again for the desirable allele using the RM190 marker. F_5 seed was harvested in Puerto Rico and the family bulks were planted in unreplicated yield trials in Beaumont during 1998 along with panicle rows in the nursery. Selections were made using the yield and agronomic data collected in 1998 and two generations of panicle to row plantings were made subsequently. Following the 1999 Fall nursery, a five row bulk of F_8 rows was harvested (96165A4-11-39-1-1-7-BK-BK) and planted in a strip in Beaumont 2000. This was bulk harvested and a larger strip was planted in Beaumont during 2001 from which 196 panicles were harvested. These F_{11} panicles were planted in the 2001 Fall nursery in Puerto Rico and panicles were selected from 15 rows for the next generation. The 165 F_{12} panicles were planted in Beaumont during 2002 as a headrow purification block. The field was observed and rogued for any offtypes, panicles were picked, and the field was bulk harvested. This F_{13} seed served as the source for planting the foundation seed field in Beaumont during 2003. Hidalgo has been observed for three generations of reproduction and seed increase appearing to be uniform and stable and no variants or offtypes have been observed. Replicated yield trials were conducted at four Texas locations in 1999. In 2000, Hidalgo was entered as RU 0003009 into the Uniform Rice Regional Nursery which is planted in Beaumont, TX, Crowley, LA, Stuttgart, AR, Malden, MO, and Stoneville, MS. It was tested in this trial through 2003 along with additional replicated trials in Eagle Lake, Ganado, and Bay City, TX.

Exhibit B. Statement of Distinctness

- **Hidalgo averages 8 days earlier in days to heading as compared to its parent Cypress.**

Site		Location	Cypress	Hidalgo	Cypress	Hidalgo	t Value	Prob>t
1	1999	Bay City, TX	75	70				
2	1999	Beaumont, TX	82	70				
3	1999	Eagle Lake, TX	79	69				
4	1999	Ganado, TX	74	65	78	69	4.09	0.0064
5	2000	Beaumont, TX	83	76				
6	2000	Stuttgart, AR	84	81				
7	2000	Stoneville, MS	86	78				
8	2000	Crowley, LA	90	81				
9	2000	Ganado, TX	72	64				
10	2000	Eagle Lake, TX	84	76				
11	2000	Bay City, TX	75	65	82	74	2.11	0.0566
12	2001	Beaumont, TX	83	79				
13	2001	Stuttgart, AR	84	77				
14	2001	Stoneville, MS	86	77				
15	2001	Crowley, LA	79	74				
16	2001	Malden, MO	79	80				
17	2001	Bay City, TX	80	66				
18	2001	Eagle Lake, TX	80	74				
19	2001	Ganado, TX	77	71	81	75	3.22	0.0062
Grand Mean			81	73			3.91 (*)	0.0002
Range			72-90	64-81				

* Overall t test was performed using all data collected from 1999-2003 (n=32, see Table 2) whereas individual year t tests were performed using data collected just during the specific year.

- **Hidalgo grain has approximately 13% amylose content as compared to Cypress which has approximately 22% amylose content.** Amylose content is determined by the granule bound starch synthase gene that is associated with the microsatellite marker RM 190. The difference in amylose content between Hidalgo and Cypress is verified by differences at the RM 190 marker (Hidalgo has 120 nt, Cypress has 124 nt). This difference in amylose content results in Hidalgo having atypical cooking quality for southern US long grains as compared to Cypress which has typical cooking quality.

- **Hidalgo is classified as having a high gelatinization temperature as determined by an alkali spreading rating of 2.5 in 1.7% potassium hydroxide where as Cypress is classified as having an intermediate gelatinization temperature as determined by an alkali spreading value of 4 in 1.7% potassium hydroxide. This difference in alkali spreading value results in Hidalgo having atypical cooking quality for southern US long grains as compared to Cypress which has typical cooking quality.**

Cala is a sister line of Hidalgo and is the cultivar that is most similar to.

- **Hidalgo has lower whole grain milling quality as compared to Cala. Milling quality is determined using 125 g rough rice sample, that is dehulled, milled using a McGill No.2, weighed (total milled rice), and then the whole milled grains are separated out (whole milled rice) using a Clipper Cleaner. This is then converted to a percentage based upon the 125 g of rough rice. Developing a cultivar that produces stable and high milling yields over a diversity of environments is considered desirable. However, because of the labor involved with this measurement, many of the locations where the cultivars have been tested used only one replication to assess milling yield. For this reason the statistical analysis that follows involves 29 data points collected from 7 locations over 5 years.**

Whole grain milling yield (%) of Hidalgo and Cala evaluated across 29 Southern US locations during 1999-2003. Statistical comparisons include variety means, variety ranges, t test comparing two varieties, and variety means for each year.

Year	Location	Means By Year-Loc		Means over Years	
		Cala	Hidalgo	Cala	Hidalgo
1999	Bay City, TX	65	65		
1999	Beaumont, TX	64	64		
1999	Eagle Lake, TX	69	68		
1999	Ganado, TX	65	66	65.8	65.8
2000	Bay City, TX	67	66		
2000	Beaumont, TX	61	56		
2000	Crowley, LA	70	67		
2000	Eagle Lake, TX	65	66		
2000	Ganado, TX	68	67		
2000	Stoneville, MS	56	56		
2000	Stuttgart, AR	61	60	64.0	62.6
2001	Beaumont, TX	62	55		
2001	Crowley, LA	68	64		
2001	Eagle Lake, TX	67	65		
2001	Ganado, TX	69	67		
2001	Stoneville, MS	58	54		
2001	Stuttgart, AR	66	65	65.0	61.7
2002	Bay City, TX	70	67		
2002	Beaumont, TX	67	62		
2002	Crowley, LA	72	64		
2002	Eagle Lake, TX	67	61		
2002	Stoneville, MS	60	57		
2002	Stuttgart, AR	68	67	67.3	63.0
2003	Beaumont, TX	65	66		
2003	Crowley, LA	67	69		
2003	Eagle Lake, TX	64	59		
2003	Ganado, TX	63	56		
2003	Stuttgart, AR	71	67		
2003	Stoneville, MS	57	54	64.5	61.8

Grand Mean 63.67 60.93
Range 56-72 54-69

t value Prob>Abs t
2.11 0.0394

- Hidalgo lacks the Pi-z blast resistance gene that Cala has and is susceptible to races IC 17 and IE 1K of *Pyricularia grisea* whereas Cala has elevated resistance to these races.

Reaction of Hidalgo and Cala, along with several other check cultivars, to inoculation trials with blast (*P. grisea*) races IC 17 and IE 1K over two years. Conducted at Beaumont, TX using a scale of 1= highly resistant to 9= highly susceptible.

Blast Pathotype

Year	Cultivar	IC-17	IE-1K
------	----------	-------	-------

01	Jefferson	1	1
01	Cocodrie	1	1
01	Cypress	3	4
01	Saber	1	1
01	Cadet	1	1
01	Jacinto	3	6
01	Cala	6	6
01	Hidalgo	9	7

03	Jefferson	0	0
03	Cocodrie	0	0
03	Cypress	7	2
03	Saber	1	0
03	Cadet	.	.
03	Jacinto	.	.
03	Cala	1	1
03	Hidalgo	7	7

Exhibit C. Objective Description of Variety.

See attached form.

Exhibit D. Optional Supporting Information

Hidalgo possesses a semidwarf plant type that is similar to Saber in height (98 cm = 39 in) and is 3 cm taller than Jacinto (Table 1). All plant parts are glabrous (smooth), unlike Jacinto which is pubescent. In 32 trials conducted throughout the southern U.S., the average flowering date of Hidalgo was two days earlier than Jefferson and eight days earlier Cypress (Table 2). Thus, Hidalgo is considered a very early maturing cultivar, earlier than its parents. At maturity, the spikelet is

straw-colored and awnless. At heading the apiculus is brown and then fades to straw color by maturity. The flag leaf is erect at maturity. Seedling vigor is very good and similar to Cypress.

In 32 tests across the southern U.S. (AR, TX, LA, and MS) during 1999-2003, the average grain yield of Hidalgo was 7761 lb/ac which was far greater than Jacinto (6351 lb/ac), better than Cypress (7245 lb/ac), but slightly less than Cocodrie (8058 lb/ac) (Table 3). This indicates that Hidalgo has yield potential that is competitive with Cocodrie which is currently the most widely grown long grain in the southern region. Hidalgo is more susceptible to lodging than Cypress, so it is recommended that harvest is conducted on a timely basis and fertilizer is managed well (Table 4).

Hidalgo also has similar milling quality (63%) to Cypress (62%), and is better than Cocodrie and Jacinto (60%) as well as Jefferson (59%) (Table 5). Its total milling yield is as good (70%) like Cocodrie, Cypress, and Jefferson (Table 6). The test weight of Hidalgo (lb/bu) is similar to Cypress and greater than Jacinto (Table 7). A comparison of grain dimensions and kernel weight of Hidalgo (Tables 8 and 9) demonstrates that it has a relatively heavy grain and is longer in dimension than Cypress and Jacinto. The larger grain size is considered desirable in packaged rice.

Hidalgo has a similar level of resistance to the races of blast disease (*Pyricularia grisea*) as Cypress and is not as resistant as Jefferson (Tables 10 and 11). Based upon its reaction to races of blast (Table 10) and an analysis with molecular markers (RM144 and RM224), Hidalgo appears to possess the *Pi-k^h* major resistant gene for blast resistance, like its parents Cypress and Jefferson (all have RM144 = 140 nt, RM224 = 255 nt). Thus, Hidalgo appears to be more resistant to blast disease than Jacinto (which lack *Pi-k^h*) and is comparable to Cypress, but is more susceptible than Cala (which possesses the *Pi-z* resistance gene like Jefferson).

Over six years of screening nurseries inoculated with the organism that causes sheath blight disease, (*Rhizoctonia solani*), Hidalgo demonstrated a similar level of susceptibility as Cocodrie (rated 6.8) and was slightly more tolerant than Cypress (7.0) and Jacinto (7.2) (Table 12).

Observations of natural incidences of narrow leaf brown spot [*Cercospora janseana* (Racib) O.], brown spot [*Bipolaris oryzae* (B. de Haan) Ellis], leaf smut [*Entyloma oryzae* H. & D. Sydow], panicle blight, and the physiological disorder, straighthead have been limited, but Hidalgo appears to be similar to Cypress in its reaction to these diseases (data not shown).

The endosperm of Hidalgo is nonglutinous and is covered by a light brown pericarp. Hidalgo has amylose content of approximately 13% and a high-intermediate alkali spreading value (in 1.7% KOH solution) like Jacinto. An analysis of the genetic marker associated with the granule bound starch synthase, indicated that Hidalgo has the same *Waxy* allele as Pelde which is found in other Pelde descendants like Cadet, Jacinto, and Cala. As a non-processed rice, these cultivars will result in a softer and more sticky cooked product than is considered acceptable in conventional long grains like Cypress and Cocodrie. However when these grain chemistry properties are coupled with specialized industrial processing, they can be used to produce a quick-cooking brown rice. Thus, development of cultivars with these properties offers the processing industry a diversified product

line and consumers the convenience of quick cooking along with the health benefits associated with whole grain brown rice.

REFERENCES

- Ayers, McClung, Larkin, Bligh, Jones, and Park. 1997. Microsatellites and a single nucleotide polymorphism differentiate apparent amylose classes in an extended pedigree of US rice germplasm. *Theoretical and Applied Genetics*. 94:773-781.
- Bormans, C.A., M.A. Marchetti, C.W. Johnson, A.M. McClung, and W.D. Park. 2004. Molecular markers linked to the blast resistance gene Pi-z in rice for use in marker assisted selection. *J. of Theor. Appl. Genet.* 107:1014-1020.
- Fjellstrom, R.G., C.A. Bormans, M.A. Marchetti, A.R. Shank, W.D. Park, and A.M. McClung. 2004. Development of DNA markers suitable for marker assisted selection of three Pi-genes conferring resistance to multiple *Pyricularia grisea* pathotypes. *Crop Sci.* 44:1790-1798.

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0581-0055. The time required to complete this information collection is estimated to average 1.4 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

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To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326-W, Whitten Building, 14th and Independence Avenue, SW, Washington, DC 20250-9410 or call 202-720-5964 (voice and TDD). USDA is an equal opportunity provider and employer.

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
SCIENCE AND TECHNOLOGY
PLANT VARIETY PROTECTION OFFICE
BELTSVILLE, MD 20705

Exhibit C

OBJECTIVE DESCRIPTION OF VARIETY
Rice (*Oryza sativa*)

RAP 7/18/05

NAME OF APPLICANT (S) TAES/USDA ARS	TEMPORARY OR EXPERIMENTAL DESIGNATION RU 0003009	VARIETY NAME Hidalgo
ADDRESS (Street and No. or RD No., City, State, and Zip Code, Country) Texas Agricultural Experiment Station 2147 TAMU College Station, TX 77843-2147		FOR OFFICIAL USE ONLY PVPO NUMBER 2005 000 51

PLEASE READ ALL INSTRUCTIONS CAREFULLY:

Place the appropriate number that describes the character of this variety in the spaces provided below. These numbers are also code numbers corresponding to descriptors developed by IBGR-IRRI Rice Advisory Committee and the US Rice Crop Advisory Committee. Breeders will demonstrate distinctness more readily by describing as many characters as is possible.

1. MATURITY: Days to Heading (Seedling to 50% Heading)

A. South: (Location: Southern U.S.) at 100 kg/ha (Nitrogen Rate)

75 Number of Days

2 Days Earlier Than Check Variety: Jefferson

75 Days Same As Check Variety: Cala

9 Days Later Than Check Variety: Cadet

1 Maturity Class
1 = Very Early (85 Days or Less) 2 = Early (86 - 100)
3 = Intermediate (101 - 115) 4 = Late (More Than 115)

B. California: (Location:) at kg/ha (Nitrogen Rate)

Number of Days

Days Earlier Than Check Variety:

Days Same As Check Variety:

Days Later Than Check Variety:

Maturity Class
1 = Very Early (90 Days or Less) 2 = Early (91 - 97)
3 = Intermediate (98 - 104) 4 = Late (More Than 104)

2. CULM:

3 Angle (Degrees from Perpendicular after Flowering):
1 = Erect (Less than 30°) 3 = Intermediate (About 45°) 5 = Open (About 60°)
7 = Spreading (More than 60° but the culms do not rest on the ground)
9 = Procumbent (The culm or its lower part rests on the ground surface)

2. CULM: (continued)

LENGTH

98 • 0 cm (Soil level to top of extended panicle on main stem)5 • 0 cm Shorter Than Check Variety: MaybelleLength Same as Check Variety: Saber7 • 0 cm Longer than Check Variety: Jefferson1 Height Class: 1 = Semidwarf 2 = Short 3 = Medium 4 = Tall1 Internode Color: (After Flowering): 1 = Green 2 = Light Gold 3 = Purple Lines 4 = Purple3 Strength (Lodging Resistance): 1 = Strong (no Lodging) 3 = Moderately Strong (Most Plants Leaning)
5 = Intermediate (Most Plants Lodged) 7 = Weak (Most Plants Flat)
9 = Very Weak (All Plants Flat)**3. FLAG LEAF:** (After Heading)4 1 • 1 cm Length 1 8 • 6 mm Width1 Pubescence: 1 = Glabrous 2 = Intermediate 3 = Pubescent1 Leaf Angle (After Heading): 1 = Erect 3 = Intermediate 5 = Horizontal 7 = Descending2 Blade Color: 1 = Pale Green 2 = Green 3 = Dark Green 4 = Purple Tips
5 = Purple Margins 6 = Purple Blotch 7 = Purple1 Basal Leaf Sheath Color: 1 = Green 2 = Purple Lines 3 = Light Purple 4 = Purple**4. LIGULE:**1 9 • 0 mm Length (From base of collar to the tip, at late vegetative stage)1 Color: (Late Vegetative Stage): 1 = White 2 = Purple Lines 3 = Purple2 Shape: 1 = Acute to Acuminate 2 = 2-Cleft 3 = Truncate1 Collar Color (Late Vegetative Stage): 1 = Pale Green 2 = Green 3 = Purple1 Auricle Color (Late Vegetative Stage): 1 = Pale Green 2 = Purple**5. PANICLE:**2 3 • 5 cm Length5 Type: 1 = Compact 5 = Intermediate 9 = Open2 Secondary Branching: 1 = Absent 2 = Light 3 = Heavy 4 = Clustering3 Exsertion (Near Maturity): 1 = Less than 90% 2 = 90 – 99% 3 = 100% Exserted2 Axis: 1 = Straight 2 = Droopy3 Shattering: 1 = Very Low (Less Than 1%) 3 = Low (1 – 5%) 5 = Moderate (6 – 25%)
7 = Moderately High (26 – 50%) 9 = High (More than 50%)3 Threshability: 1 = Difficult 2 = Intermediate 3 = Easy**6. GRAIN:** (Spikelet)0 Awns (After Full Heading): 0 = Absent 1 = Short and Partly Awned 5 = Short and Fully Awned
7 = Long and Partly Awned 9 = Long and Fully Awned2 Apiculus Color (At Maturity) 1 = White 2 = Straw 3 = Brown (Tawny) 4 = Red
5 = Red Apex 6 = Purple 7 = Purple Apex1 Stigma Color: 1 = White 2 = Light Green 3 = Yellow 4 = Light Purple 5 = Purple

6. GRAIN: (Spikelet)0 Lemma and Palea Color (At Maturity):

0 = Straw

3 = Brown Furrows on Straw

6 = Purple Spots on Straw

9 = Black

1 = Gold and/or Gold Furrows on Straw Background

4 = Brown (Tawny)

7 = Purple Furrows on Straw

10 = White

2 = Brown Spots on Straw (Piebald)

5 = Reddish to Light Purple

8 = Purple

1 Lemma and Palea Pubescence:

1 = Glabrous

2 = Hairs on Lemma Keel

3 = Hairs on Upper Portion

4 = Short Hairs

5 = Long Hairs (Velvety)

1 Spikelet Sterility (At Maturity):

1 = Highly Fertile (> 90%)

3 = Fertile (75 – 90%)

5 = Partly Sterile (50 – 74%)

7 = Highly Sterile (< 50% to Trace)

9 = Completely Sterile (0%)

7. GRAIN: (Seed)2 Seed Coat (Bran) Color:

1 = White

5 = Red

2 = Light Brown

6 = Variable Purple

3 = Speckled Brown

7 = Purple

4 = Brown

1 Endosperm Type:

1 = Nonglutinous (Nonwaxy)

2 = Glutinous (Waxy)

3 = Indeterminate

1 Endosperm Translucency:

1 = Clear

5 = Intermediate

9 = Opaque

0 Endosperm Chalkiness:

0 = None

5 = Medium (10 – 20% of Sample)

1 = Small (Less than 10% of Sample)

9 = Large (More than 20% of Sample)

0 Scent (Aroma):

0 = Nonscented

1 = Lightly Scented

2 = Scented

Shape Class (Length/Width Ratio):

3 Paddy

1 = Short (2.2:1 and Less)

2 = Medium (2.3:1 to 3.3:1)

3 = Long (3.4:1 and More)

3 Brown

1 = Short (2.0:1 and Less)

2 = Medium (2.1:1 to 3.0:1)

3 = Long (3.1:1 and More)

3 Milled

1 = Short (1.9:1 and Less)

2 = Medium (2.0:1 to 2.9:1)

3 = Long (3.0:1 and More)

Measurements:

Grain Form

Length
(mm)Width
(mm)Thickness
(mm)L/W
Ratio1000 Grains
(grams)

Paddy

10.322.571.994.0223.77

Brown

7.742.221.743.4920.61

Milled

7.692.101.713.6618.39 Milling Quality (% Hulls)63

Milling Yield (% White Kernel (head) Rice to Rough Rice)

7 % Protein13

% Amylose

Alkali Spreading Value: 2-3 1.5% KOH Solution2-3 1.7% KOH Solution1 Gelatination Temperature Type:

1 = High

5 = Intermediate

7 = Low

Amylographic Paste Viscosity (Brabender Units)

Peak

Hot Paste

Cooled Paste

"Breakdown" "Setback"

8. RESISTANCE TO LOW TEMPERATURE:2 Germination and Seedling Vigor:

1 = Low

2 = Medium

3 = High

2 Flowering (Spikelet Fertility):

1 = Low

2 = Medium

3 = High

9. SEEDLING VIGOR NOT RELATED TO LOW TEMPERATURE:3 Vigor:

1 = Low

2 = Medium

3 = High

RIP 7/15/05

10. BLAST RESISTANCE: (*Pyricularia oryzae*). (International races found under References)

		0 = Immune		1 = Resistant		3 = Moderately Resistant		5 = Intermediate		7 = Moderately Susceptible		9 = Susceptible	
Group		IB		IC		ID		IE		IG		IH	
Number		1	5	45	49	54	1	17	1	13	1	1	1
Resistance		—	—	1	9	1	—	7	—	—	7	1	1

1E1 1E1k

9

9

11. RESISTANCE TO OTHER DISEASES:

0 = Immune 1 = Resistant 3 = Moderately Resistant 5 = Intermediate 7 = Moderately Susceptible 9 = Susceptible

- | | |
|--|--|
| <u>1</u> Narrow Brown Leaf Spot (<i>Cercospora oryzae</i>) | — Aggregate Sheath Spot (<i>Rhizoctonia oryzae-sativae</i>) |
| <u>1</u> Leaf Smut (<i>Entyloma oryzae</i>) | <u>3</u> Straight Head |
| <u>1</u> Brown Leaf Spot (<i>Helminthosporium oryzae</i>)
(= <i>Bipolaris oryzae</i>)
(= <i>Drechslera oryzae</i>) | <u>3</u> Kernel Smut (<i>Neovossia horrida</i>)
(= <i>Tilletia barclayana</i>) |
| — Leaf Scald (<i>Gerlachia oryzae</i>) | — White Tip Nematode (<i>Aphelenchoides besseyi</i>) |
| — Hoja Blanca Virus | — Stem Rot (<i>Sclerotium oryzae</i>) |
| <u>7</u> Sheath Rot (<i>Sarocladium oryzae</i>) | |
| — Pythium Seedling Blight (<i>Pythium</i> sp.) | — Bacterial Blight (<i>Xanthomonas campestris</i> pv. <i>oryzae</i>) |
| — Sheath Spot (<i>Rhizoctonia oryzae</i>) | <u>7</u> Sheath Blight (<i>Rhizoctonia solani</i>) |
| — Other: _____ | |

12. INSECT RESISTANCE:

0 = Immune 1 = Resistant 3 = Moderately Resistant 5 = Intermediate 7 = Moderately Susceptible 9 = Susceptible

- | | |
|-------------------|---|
| — Grasshopper | <u>3</u> Rice Stink Bug (<i>Oegalus pugnax</i>) |
| — Rice Leafhopper | — Swarm Caterpillar |
| — Rice Hispa | <u>3</u> Rice Water Weevil (<i>Lissorhoptrus oryzophilus</i>) |
| — Rice Midge | — Rice Stalk Borer (<i>Chilo plejadellus</i>) |
| — Least Skipper | — Sugarcane Borer (<i>Diatraea saccharalis</i>) |

13. OTHER DESCRIPTORS: If there are other characters that describe this variety, please indicate below:**REFERENCES**

- C. R. Adair *et al.* 1972. Rice in the United States: Varieties and Production. USDA Handbook No. 289 (Rev.), 124 pp.
- J. G. Atkins *et al.* 1967. An International Set of Rice Varieties for Differentiating Race of *Pyricularia Oryzae*. Phytopath. 57:297-301.
- IBPGR-IRRI Rice Advisory Committee. 1980. Descriptors for Rice *Oryzae Sativa* L. International Rice Research Institute. 21 pp.
- K. C. Ling and S. H. Ou, 1969. Standardization of the International Race Numbers of *Pyricularia Oryzae*. Phytopath. 59:339-342.
- B. D. Webb *et al.* 1985. Utilization Characteristics and Qualities of United States Rice. In Proceedings on Rice Grain Quality and Marketing. International Rice Research Institute (IRRI), Los Branos, Philippines. P. 25-35.

Table 1. Mean plant height (cm) of Hidalgo and selected check varieties in Texas, Louisiana, Arkansas, Missouri and Mississippi (1999-2003).

Year	Location	Jefferson	Cocodrie	Cypress	Saber	Jacinto	Cala	Hidalgo
1999	Bay City, TX	96	86	93	94	90	98	100
	Beaumont, TX	85	92	93	96	86	89	93
	Eagle Lake, TX	90	94	79	103	90	99	101
	Ganado, TX	99	100	104	102	84	103	105
2000	Beaumont, TX	92	99	100	104	102	99	100
	Stuttgart, AR	97	93	92	96	95	99	97
	Stoneville, MS	91	101	99	101	106	98	101
	Crowley, LA	95	97	97	100	96	93	94
	Ganado, TX	93	89	88	92	98	96	99
	Eagle Lake, TX	82	87	85	92	90	86	90
	Bay City, TX	92	99	100	100	97	100	98
2001	Beaumont, TX	94	95	98	97	94	99	98
	Stuttgart, AR	96	95	99	99	98	99	103
	Stoneville, MS	98	99	94	101	98	100	101
	Crowley, LA	91	87	92	93	95	96	99
	Malden, MO	89	95	85	90	94	95	91
	Bay City, TX	84	94	97	101	94	90	91
	Eagle Lake, TX	87	89	84	93	89	94	98
	Ganado, TX	91	96	97	95	93	99	97
2002	Beaumont, TX	92	93	90	94	95	97	95
	Stuttgart, AR	97	98	96	103	104	108	101
	Stoneville, MS	87	95	96	104	101	97	99
	Crowley, LA	83	83	88	87	89	86	90
	Malden, MO	93	95	84	92	101	92	92
	Bay City, TX	87	102	100	107	.	97	94
	Eagle Lake, TX	87	90	88	95	.	91	91
	Ganado, TX	91	96	101	100	.	96	92
2003	Beaumont, TX	86	83	105	103	.	101	98
	Stuttgart, AR	94	102	105	102	.	102	109
	Crowley, LA	98	101	108	106	.	101	108
	Eagle Lake, TX	86	89	97	102	.	91	94
	Ganado, TX	92	97	97	97	.	96	101
	GRAND Mean	91	94	95	98	95	96	98

Table 2. Mean number of days to 50% heading for Hidalgo and selected check varieties in Texas, Louisiana, Arkansas, Missouri and Mississippi (1999-2003).

Year	Location	Jefferson	Cocodrie	Cypress	Saber	Jacinto	Cala	Hidalgo
1999	Bay City, TX	69	70	75	75	71	71	70
	Beaumont, TX	71	75	82	79	74	70	70
	Eagle Lake, TX	71	75	79	77	74	70	69
	Ganado, TX	65	67	74	72	66	64	65
2000	Beaumont, TX	73	80	83	81	79	76	76
	Stuttgart, AR	78	84	84	82	82	79	81
	Stoneville, MS	80	84	86	84	82	79	78
	Crowley, LA	83	88	90	87	85	80	81
	Ganado, TX	65	69	72	72	70	64	64
	Eagle Lake, TX	77	79	84	82	68	76	76
	Bay City, TX	66	68	75	71	82	65	65
2001	Beaumont, TX	80	84	83	81	78	78	79
	Stuttgart, AR	96	80	84	81	81	77	77
	Stoneville, MS	98	81	86	84	78	74	77
	Crowley, LA	91	76	79	75	75	73	74
	Malden, MO	89	82	79	78	80	79	80
	Bay City, TX	64	73	80	78	73	65	66
	Eagle Lake, TX	74	84	80	78	76	72	74
	Ganado, TX	72	77	77	78	74	72	71
2002	Beaumont, TX	71	76	80	80	78	71	70
	Stuttgart, AR	91	97	99	99	96	91	93
	Stoneville, MS	77	82	87	84	82	78	79
	Crowley, LA	82	82	85	85	84	83	83
	Malden, MO	93	97	107	104	87	95	92
	Bay City, TX	74	77	81	81	.	74	75
	Eagle Lake, TX	73	78	80	78	.	73	73
	Ganado, TX	67	76	81	81	.	69	66
2003	Beaumont, TX	79	71	80	80	.	70	80
	Stuttgart, AR	86	94	95	91	.	91	88
	Crowley, LA	68	72	73	73	.	72	71
	Eagle Lake, TX	73	79	81	79	.	78	74
	Ganado, TX	74	76	79	80	.	78	75
	GRAND Mean	77	79	83	81	78	75	75

Table 3. Average main crop yield (LB/AC) for Hidalgo and selected check varieties in Texas, Louisiana, Arkansas, Missouri and Mississippi (1999-2003).

Year	Location	Jefferson	Cocodrie	Cypress	Saber	Jacinto	Cala	Hidalgo
1999	Bay City, TX	6372	5522	5440	5641	6158	6194	6053
	Beaumont, TX	7295	8471	5986	6979	6501	7739	8867
	Eagle Lake, TX	6948	6306	5549	5436	5340	6417	6621
	Ganado, TX	7352	7035	6787	6149	5801	7628	7237
2000	Beaumont, TX	9359	10200	8754	8920	8713	9220	9578
	Stuttgart, AR	7462	9149	7577	8142	7368	7191	8852
	Stoneville, MS	6951	8796	7741	8628	7461	6553	6832
	Crowley, LA	7813	8125	8076	7184	6881	7988	8038
	Ganado, TX	9359	8577	7368	6416	7244	7541	6826
	Eagle Lake, TX	7907	8299	7265	7035	6600	7064	7602
	Bay City, TX	7753	7325	7256	5948	5920	7113	6952
2001	Beaumont, TX	9508	10245	9054	9682	2349	9622	10421
	Stuttgart, AR	7630	8698	7172	7303	6441	8495	8997
	Stoneville, MS	6820	7237	6150	6580	6291	6949	6124
	Crowley, LA	6717	7380	6888	5210	6986	7026	7626
	Bay City, TX	6675	7452	7052	6593	6404	5568	6993
	Eagle Lake, TX	7258	7712	7397	6246	5646	6371	6591
	Ganado, TX	7001	7536	7573	6967	6894	6757	7400
2002	Beaumont, TX	9528	10399	7354	9345		9126	9128
	Stuttgart, AR	7442	7695	6495	6677	5282	7980	8485
	Stoneville, MS	7173	8301	6844	7527	7993	7568	8441
	Crowley, LA	7596	7721	8590	6488	5100	7432	7768
	Bay City, TX	7146	8027	6159	6167		6814	7242
	Eagle Lake, TX	8163	7733	7681	7127		8102	7766
	Ganado, TX	7391	8355	7037	7760		6335	
2003	Beaumont, TX	6761	7681	6920	7948		7256	6960
	Stuttgart, AR	7650	7830	7695	7155		8280	8640
	Crowley, LA	6170	8432	8332	6452		6938	8139
	Eagle Lake, TX	8393	8532	8561	8226		7848	8218
	Ganado, TX	6125	6961	6598	5360		6757	6708
	GRAND Mean	7524	8058	7245	7043	6351	7396	7761

Table 4. Average lodging (%) for Hidalgo and selected check varieties in Texas, Louisiana, Arkansas, Missouri and Mississippi (1999-2003).

Year	Location	Jefferson	Cocodrie	Cypress	Saber	Jacinto	Cala	Hidalgo
2000	Beaumont, TX	3	0	45	0	3	3	8
	Stuttgart, AR	0	0	0	0	0	0	0
	Stoneville, MS	0	0	0	0	0	0	0
	Crowley, LA	0	0	0	0	0	0	43
	Ganado, TX	0	0	0	0	0	17	3
	Eagle Lake, TX	0	7	40	0	30	0	0
	Bay City, TX	7	0	0	0	0	17	17
2001	Beaumont, TX	0	0	0	0	75	0	0
	Stuttgart, AR	0	0	0	0	0	42	22
	Stoneville, MS	17	1	64	26	43	56	86
	Crowley, LA	0	0	0	0	0	0	0
	Bay City, TX	0	0	0	0	38	80	75
	Eagle Lake, TX	1	6	0	0	66	25	75
	Ganado, TX	0	0	0	0	33	0	18
2002	Beaumont, TX	0	0	0	0	45	15	18
	Stuttgart, AR	0	0	0	0	0	0	0
	Stoneville, MS	0	0	95	16	63	0	0
	Crowley, LA	0	0	0	0	65	23	0
	Bay City, TX	0	0	0	0	.	43	67
	Eagle Lake, TX	0	0	0	0	.	0	0
	Ganado, TX	83	17	0	0	.	100	100
2003	Beaumont, TX	0	5	5	0	.	0	0
	Stuttgart, AR	23	53	3	0	.	15	33
	Crowley, LA	0	0	0	0	.	0	0
	Eagle Lake, TX	0	0	5	0	.	27	23
	Ganado, TX	0	0	0	0	.	10	13
	GRAND Mean	5	3	10	2	26	18	23

Table 5. Whole milling yield (%) for Hidalgo and selected check varieties in Texas, Louisiana, Arkansas, and Mississippi (1999-2003).								
Year	Location	Jefferson	Cocodrie	Cypress	Saber	Jacinto	Cala	Hidalgo
1999	Bay City, TX	56	62	64	63	62	65	65
	Beaumont, TX	59	59	53	61	61	64	64
	Eagle Lake, TX	64	63	65	61	63	69	68
	Ganado, TX	54	59	64	59	58	65	66
2000	Beaumont, TX	59	59	60	59	56	61	56
	Stuttgart, AR	45	60	58	43	58	61	60
	Stoneville, MS	46	51	59	59	55	56	56
	Crowley, LA	63	64	61	68	65	70	67
	Ganado, TX	59	61	66	66	64	68	67
	Eagle Lake, TX	57	52	60	58	55	65	66
	Bay City, TX	58	60	54	63	59	67	66
2001	Beaumont, TX	48	49	52	57	52	62	55
	Stuttgart, AR	63	64	67	67	65	66	65
	Stoneville, MS	46	55	54	51	57	58	54
	Crowley, LA	64	65	68	67	66	68	64
	Bay City, TX	59	59	66	62	62		61
	Eagle Lake, TX	62	60	65	57	60	67	65
	Ganado, TX	67	65	66	67	58	69	67
2002	Beaumont, TX	63	59	65	66	63	67	62
	Stuttgart, AR	65	68	68	66	69	68	67
	Stoneville, MS	51	56	55	59	51	60	57
	Crowley, LA	67	64	69	70	63	72	64
	Bay City, TX	64	59	62	66		70	67
	Eagle Lake, TX	60	56	63	67		67	61
	Ganado, TX	62	61	63	67		68	66
2003	Beaumont, TX	67	58	63	63		65	66
	Stuttgart, AR	64	68	71	67		71	67
	Crowley, LA	68	66	69	70		67	69
	Eagle Lake, TX	55	54	59	62		64	59
	Ganado, TX	62	56	61	62		63	56
GRAND Mean		59	60	62	62	60	66	63

Table 6. Total milling yield (%) for Hidalgo and selected check varieties in Texas, Louisiana, Arkansas, and Mississippi (1999-2003).

Year	Location	Jefferson	Cocodrie	Cypress	Saber	Jacinto	Cala	Hidalgo
1999	Bay City, TX	72	72	71	69	71	72	72
	Beaumont, TX	69	68	65	67	69	70	70
	Eagle Lake, TX	72	73	72	69	72	73	73
	Ganado, TX	69	71	72	69	71	70	70
2000	Beaumont, TX	68	68	68	66	67	68	66
	Stuttgart, AR	71	72	73	70	71	71	70
	Stoneville, MS	64	65	68	66	67	65	65
	Crowley, LA	73	70	70	71	71	70	74
	Ganado, TX	68	73	73	70	71	74	73
	Eagle Lake, TX	72	70	71	68	70	73	73
	Bay City, TX	72	70	69	68	69	71	70
2001	Beaumont, TX	68	67	67	68	68	71	69
	Stuttgart, AR	69	69	71	69	68	70	70
	Stoneville, MS	68	66	65	65	67	68	66
	Crowley, LA	70	69	71	69	65	71	70
	Bay City, TX	68	69	71	68	70	.	69
	Eagle Lake, TX	70	70	71	68	70	70	70
	Ganado, TX	72	71	73	70	71	72	72
2002	Beaumont, TX	72	71	73	70	73	73	72
	Stuttgart, AR	71	73	71	69	73	72	71
	Stoneville, MS	65	64	63	66	64	65	63
	Crowley, LA	72	69	72	71	68	73	69
	Bay City, TX	70	70	69	69	.	72	72
	Eagle Lake, TX	70	67	70	70	.	71	70
	Ganado, TX	71	71	72	70	.	71	71
2003	Beaumont, TX	74	75	73	70	.	71	73
	Stuttgart, AR	72	72	73	70	.	73	71
	Crowley, LA	72	72	72	71	.	70	71
	Eagle Lake, TX	70	66	67	67	.	70	68
	Ganado, TX	69	68	69	68	.	68	66
	GRAND Mean	70	70	70	69	69	71	70

Table 7. Average Test Weight (BU/AC) for Hidalgo and selected check varieties in Mississippi and several Texas locations (2000-2003).

Year	Location	Jefferson	Cocodrie	Cypress	Jacinto	Cala	Hidalgo
2000	Stoneville, MS	45	46	46	40	44	44
	Beaumont, TX	49	49	48	42	49	48
	Ganado, TX	42	45	43	37	43	44
	Bay City, TX	45	46	44	39	43	43
	Eagle Lake, TX	47	44	44	38	46	45
2001	Stoneville, MS	41	44	40	34	42	41
	Ganado, TX	44	47	45	37	44	42
	Bay City, TX	42	45	46	40	42	42
	Eagle Lake, TX	45	47	45	37	44	43
2002	Stoneville, MS	43	44	42	36	42	42
	Bay City, TX	43	45	44	.	44	43
	Eagle Lake, TX	40	45	43	.	43	41
2003	Eagle Lake, TX	43	43	45	.	43	40
	Ganado, TX	42	44	44	.	42	40
	GRAND Mean	44	45	44	38	44	43

Table 8. Average kernel weight (mg) for Hidalgo and selected check varieties in Arkansas (2000-2003).

Year	Location	Jefferson	Cocodrie	Cypress	Saber	Jacinto	Cala	Hidalgo
2000	Stuttgart, AR	20.27	18.20	18.40	13.60	17.60	19.07	18.00
2001	Stuttgart, AR	18.00	19.33	18.67	14.67	16.00	22.67	20.67
2002	Stuttgart, AR	20.07	18.53	17.93	14.67	16.80	17.27	18.26
2003	Stuttgart, AR	20.30	19.60	17.70	14.90		17.20	19.30
	GRAND Mean	19.66	18.92	18.18	14.46	16.80	19.05	19.06

Table 9. Rough, brown, and milled grain dimensions and weight of Hidalgo, Cala Cypress, and Jacinto long grain rice cultivars grown at Beaumont, TX in 2002.

		Length	Width	Thickness	Weight	L/W ratio
		mm	mm	mm	g/1000 ker	
Hidalgo	Rough	10.32	2.57	1.99	23.77	4.02
	Brown	7.74	2.22	1.74	20.61	3.49
	Milled	7.69	2.10	1.71	18.39	3.66
Cala	Rough	10.36	2.58	1.98	22.85	4.02
	Brown	7.57	2.21	1.79	19.67	3.43
	Milled	7.45	2.10	1.71	18.28	3.55
Cypress	Rough	9.56	2.55	2.00	24.18	3.75
	Brown	7.48	2.27	1.81	20.03	3.30
	Milled	7.40	2.19	1.80	18.91	3.38
Jacinto	Rough	10.29	2.57	2.01	20.11	4.00
	Brown	7.36	2.15	1.73	18.71	3.42
	Milled	7.34	2.00	1.65	17.17	3.68

Table 10. Comparison for reaction to blast* (*Pyricularia grisea*) in inoculated greenhouse tests conducted at Beaumont, Tx (2001 and 2003).

Blast Race/Pathotype

Year	Cultivar	IB-1J	IB-17	IB-49	IB-54	IC-17	IE-1K	IG-1	IH-1
01	Jefferson	.	.	6	0	1	1	0	.
01	Cocodrie	.	.	4	1	1	1	0	.
01	Cypress	.	.	6	2	3	4	1	.
01	Saber	.	.	3	0	1	1	1	.
01	Cadet	.	.	7	0	1	1	0	.
01	Jacinto	.	.	6	0	3	6	7	.
01	Cala	.	.	7	0	6	6	1	.
01	Hidalgo	.	.	5	0	9	7	2	.
03	Jefferson	.	.	7	0	0	0	0	0
03	Cocodrie	.	.	7	0	0	0	0	0
03	Cypress	.	.	7	0	7	2	0	0
03	Saber	.	.	7	0	1	0	0	0
03	Cadet	.	.	.	.	.	.	.	.
03	Jacinto	.	.	.	.	.	.	.	.
03	Cala	.	.	7	0	1	1	0	0
03	Hidalgo	.	.	7	0	7	7	1	4

* Using a scale of 0=no lesions to 8=large water soaked lesions without well-defined borders

Table 11. Comparison for reaction to blast* (*Pyricularia grisea*) in inoculated field plots located at Beaumont, Tx (1999-2003).

Year	Jefferson	Cocodrie	Gulftmont	Kaybonnet	Cypress	Madison	Saber	Dixiebelle	Cala	Hidalgo	Cadet	Jacinto
99	1	3	3	1	4	2	1	6	1	4	4	8
00	5	5	5	1	6	1	3	7	5	6	6	9
00	5	5	4	1	3	1	3	4	5	4	5	6
01	0	2	6	2	4	2	1	2	2	2	2	6
03	0	2	5	0	4		1	6	6	4		
Mean	2	3	5	1	4	2	2	5	4	4	4	7

* Using a scale where 1= very resistant to 9=very susceptible.

Table 12. Comparison for reaction * to sheath blight (*Rhizoctonia solani*) in inoculated field plots located at Texas and Arkansas (1999 - 2003).

Year	Jefferson	Cocodrie	Gulfmont	Kaybonnet	Cypress	Madison	Saber	Dixie Belle	Cala	Hidalgo	Cadet	Jacinto	State
99	5	5	9	.	5	8	3	6	5	6	6	5	TX
00	6	6	8	6	8	6	6	6	5	4	8	9	TX
00	8	7	7	5	6	7	7	8	8	8	.	7	AR
01	7	8	8	6	7	8	5	7	8	8	6	7	TX
02	6	6	7	2	8	6	4	7	6	7	.	8	TX
03	8	9	8	6	8	.	7	8	9	8	.	.	TX
Mean	6.7	6.8	7.8	5.0	7.0	7.0	5.3	7.0	6.8	6.8	6.7	7.2	
Min-Max	5-8	5-9	7-9	2-6	5-8	6-8	3-7	6-8	5-9	4-8	6-8	5-9	

* Using a scale where 1= very resistant to 9=very susceptible.

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). The information is held confidential until the certificate is issued (7 U.S.C. 2426).

EXHIBIT E
STATEMENT OF THE BASIS OF OWNERSHIP

1. NAME OF APPLICANT(S) Texas Agricultural Experiment Station/USDA-ARS		2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER RU 0003009	3. VARIETY NAME Hidalgo
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP, and Country) Office of the Director, TAES 2147 TAMU College Station, TX 77843-2147 USDA-ARS 1509 Aggie Dr. Beaumont, TX 77713		5. TELEPHONE (Include area code) (979) 845-4747	6. FAX (Include area code) (979) 458-4765
		7. PVPO NUMBER 200500051	

8. Does the applicant own all rights to the variety? Mark an "X" in the appropriate block. If no, please explain. ☒ YES ☐ NO9. Is the applicant (individual or company) a U.S. national or a U.S. based company? If no, give name of country. ☒ YES ☐ NO10. Is the applicant the original owner? ☒ YES ☐ NO If no, please answer one of the following:

a. If the original rights to variety were owned by individual(s), is (are) the original owner(s) a U.S. National(s)?

☐ YES ☐ NO If no, give name of country

b. If the original rights to variety were owned by a company(ies), is (are) the original owner(s) a U.S. based company?

☐ YES ☐ NO If no, give name of country

11. Additional explanation on ownership (Trace ownership from original breeder to current owner. Use the reverse for extra space if needed):

TAES policy and handbook manual provide that all germplasm and varieties developed by its employees in the course of their duties are owned by TAES. A copy of this policy is provided for your records.

PLEASE NOTE:

Plant variety protection can only be afforded to the owners (not licensees) who meet the following criteria:

1. If the rights to the variety are owned by the original breeder, that person must be a U.S. national, national of a UPOV member country, or national of a country which affords similar protection to nationals of the U.S. for the same genus and species.
2. If the rights to the variety are owned by the company which employed the original breeder(s), the company must be U.S. based, owned by nationals of a UPOV member country, or owned by nationals of a country which affords similar protection to nationals of the U.S. for the same genus and species.
3. If the applicant is an owner who is not the original owner, both the original owner and the applicant must meet one of the above criteria.

The original breeder/owner may be the individual or company who directed the final breeding. See Section 41(a)(2) of the Plant Variety Protection Act for definitions.

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0581-0055. The time required to complete this information collection is estimated to average 0.1 hour per response, including the time for reviewing the instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

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